CUSTER GALLATIN NATIONAL FOREST, SIOUX RANGER DISTRICT

RILEY PASS NEWSLETTER

MARCH 2014

IN THIS NEWSLETTER

This newsletter provides information regarding ongoing reclamation work at the Riley Pass Abandoned Uranium Mines Site. Riley Pass is in the North Cave Hills portion of the Custer National Forest's Sioux Ranger District, approximately 25 miles north of Buffalo, SD.

The site consists of 12 bluffs first mined in the 1950s (Figure 1). Tronox LLC has been determined to be the potentially responsible party for reclamation across approximately 205 acres and is legally required to pay for work in areas referred to as Tronox bluffs. The Forest Service is funding work at other bluffs, which are referred to as non-Tronox bluffs. Mined bluffs range in size from a few acres to 150 acres and contain mine wastes with hazardous substances including arsenic, molybdenum, thorium, radium, and uranium. Human health and environmental concerns are primarily related to levels of arsenic and gamma radiation from radium 226. Risk-based clean-up levels have been established for the Riley Pass site.

TRONOX BANKRUPTCY AND LITIGATION UPDATE

Tronox, LLC is the potentially responsible party for reclamation of approximately 80 percent of the Riley Pass abandoned uranium mines site. In October 2008, Tronox informed the Forest Service that it was stopping all work on the project in violation of the consent order Tronox signed the previous year. In January 2009, Tronox filed Chapter 11 bankruptcy. Riley Pass is one of numerous sites included in a bankrupty case Settlement Agreement that created environmental response trusts and provides for Tronox to pay $270 million and certain other consideration to the environmental response trusts and Governmental Environmental Claimants. The final papers to resolve the Tronox bankruptcy case have been filed with the court, and the reorganization plan is effective. The Forest Service has estimated its past and future cleanup costs for the portions of the Riley Pass site once operated by Kerr McGee at $63 million. An initial $7.2 million payment for Riley Pass has been made to the United States as a result of this case.

Additionally, the United States has pursued a pending fraudulent conveyance lawsuit against Tronox'sf ormer parent, Kerr-McGee Corporation, and Anadarko Petroleum Corporation, which purchased Kerr-McGee. The fraudulent conveyance lawsuit alleges that Kerr-McGee and Anadarko defrauded Tronox and its creditors, including the United States, by imposing on Tronox all of Kerr-McGee's environmental liabilities without sufficient assets to satisfy those liabilities. A number of Federal agencies (including the Environmental Protection Agency, the Department of Interior, and the Forest Service) filed claims. Eleven states, the Navajo Tribe, and all of Tronox's other major creditors also filed claims. Most creditors claimed Kerr McGee had committed a multi-billion dollar corporate fraud.

Over the summer of 2012, the Southern District Court of New York tried the fraudulent conveyance case. On December 12, 2013, the court issued a decision that resolved most of the disputed issues in favor of the creditors. In essence, the court found pervasive evidence of both the intent to defraud creditors and a sophisticated plan to carry out that intent. The court decided that Anadarko owed Tronox's creditors at least $5.15 billion, plus attorney's fees and court costs. The Forest Service's share of this amount would be more than sufficient to carry out the estimated cost of currently planned work at Riley Pass. The court reserved judgment on one bankruptcy issue that could increase Anadarko's liability to $14.5 billion, plus attorney's fees and court costs. Final judgment on the liability amount is pending in the court. Anadarko could appeal the judge's December 2013 decision, which could delay final judgment. Anadarko and the claimants could also enter into settlement agreements prior to final judgment. Once adequate funds are in place, it could take several years to complete reclamation work at the Tronox bluffs.

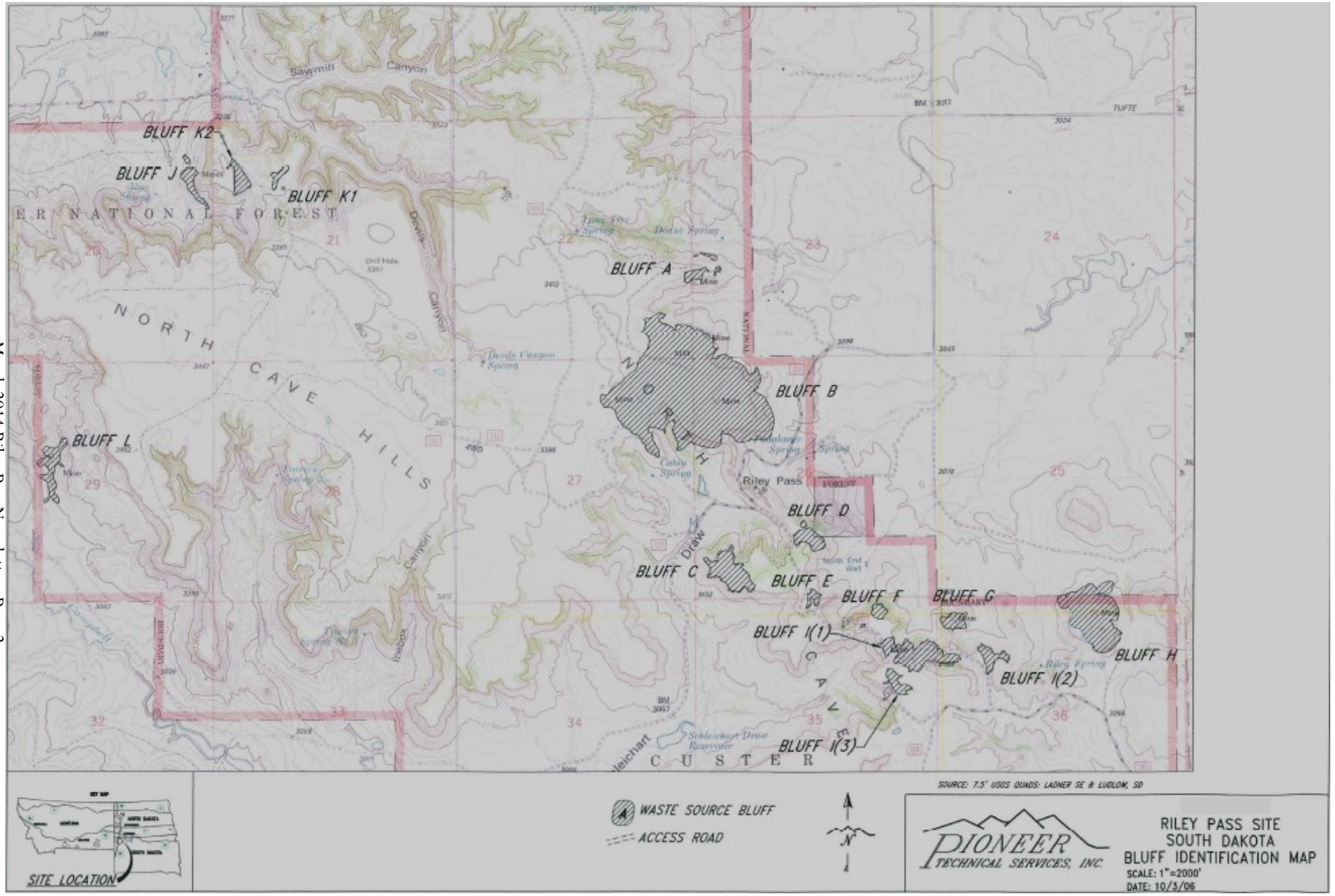

FIGURE 1. BLUFF IDENTIFICATION MAP

Riley Pass Reclamation Approach

Reclamation approach: Reclamation measures designed and implemented at Riley Pass have focused on consolidating, burying and stabilizing mine waste and stabilizing and revegetating mine spoils. Implementation has been focused on the non-Tronox bluffs. A similar approach is currently being considered and designed for the Tronox bluffs. Steps in Riley Pass reclamation are detailed below and figures in subsequent newsletter pages are intended to display how these steps have been implemented thus far.

1) **Waste characterization:** Soils are evaluated in place to determine whether metal and radiation levels exceed site-specific clean-up criteria. Soil samples are also collected and analyzed by an independent laboratory to ensure that field instruments are properly calibrated and functional. Based on previously completed site-specific human and ecologic health risk assessments, materials containing greater than 142 mg/kg arsenic and/or greater than 30 pCi/g radium 226 are considered mine waste. Mine spoils are native materials that were disturbed by mining activities. Spoils have lower contaminant levels than waste and undesirable geotechnical or agronomic properties that prevent re-vegetation. Waste characterization has been completed at all the Riley Pass bluffs. Figure 2 is an example of waste characterization completed at Non-Tronox Bluff I.

2) **Reclamation design:** Following waste characterization, quantities of mine waste and spoils are estimated based on mapping results. Engineering design work is completed to ensure that adequate space is available for waste placement. Waste is placed in areas called repositories, which are constructed to ensure that waste remains in place and water does not infiltrate through the waste. Reclamation design work for the non-Tronox Bluffs was completed under contract in 2010 by Millenium Science Engineering (MSE) of Boise, Idaho. TetraTech EC of Denver, Colorado is currently working on reclamation design work for the Tronox bluffs. Similar to MSE's non-Tronox design, TetraTech's conceptual Tronox bluffs design includes low-angle slopes and a combination of berms and channels to divert storm water off the repository. The Tronox bluffs design will be further refined over coming months. Once design is finalized, additional reclamation contracts will be advertised, awarded, and implemented at the Tronox bluffs. Figures 3 is an example of completed reclamation design for NonTronox Bluff I-1. Reclamation at Bluff I-1 was started in 2012.

3) **Repository construction:** Repository construction consists of preparing a clean, flat surface upon which waste will be placed. Riley Pass repositories have been located against the excavated faces of areas disturbed by mining, which are called highwalls. These areas are scraped clean down to the underlying sandstone or compacted waste (Figure 4). Where sandstone has significant cracks, bentonite clay is used to plug the cracks (Figure 5). A similar repository construction approach is proposed at the Tronox bluffs.

4) **Waste and spoils removal and compaction:** After the repository site is prepared, mine waste around the bluff is removed and brought up to the repository (Figures 6 to 9). At the repository, equipment is used to compact waste in place to ensure that water will not infiltrate through it. To isolate the waste and reduce potential for radiation exposure, spoils are removed from nearby areas and used to cover the compacted waste. Spoils are then further compacted. Throughout the process, engineering tests are completed to ensure that compaction will prevent water infiltration (Figure 10). Due to the size and costs associated with Bluff I-1 reclamation, work has consisted of multiple phases since 2012. Reclamation at I-1 will be completed in 2014 or 2015, dependent upon funding. Future Tronox bluffs work is anticipated to take several more years, dependent upon funding.

5) **Removal area testing and reclamation:** After waste and spoils are placed in the repository, gamma radiation and soil metals surveys are completed to verify that all waste materials have been removed and that the repository has been adequately capped (Figure 11). If test results show areas of elevated radiation or metals, additional removal and capping are completed.

6) **Cover and re-vegetate removal and repository areas:** Once all waste has been removed, repository and removal areas are stabilized by covering them with topsoil, compost, seed, and erosion matting (Figures 12 and 13). Several areas have been examined to identify potential topsoil borrow areas. To ensure that erosion that does not expose the waste in the future, the goal is to establish a thick grass cover on the repository surface. Fencing is installed around all reclaimed areas to prevent cattle from impacting the erosion matting and new vegetation.

7) **Monitoring and maintenance:** Monitoring of all reclaimed areas is conducted to ensure the waste remains stable and prevent noxious weeds and erosion. In the event that problems are noted, repairs or additional work may be necessary. To date, monitoring has indicated successful reclamation and revegetation at Non-Tronox Bluffs J, K, and I-2 (Figure 14).

FIGURE 2. BLUFF I WASTE CHARACTERIZATION.

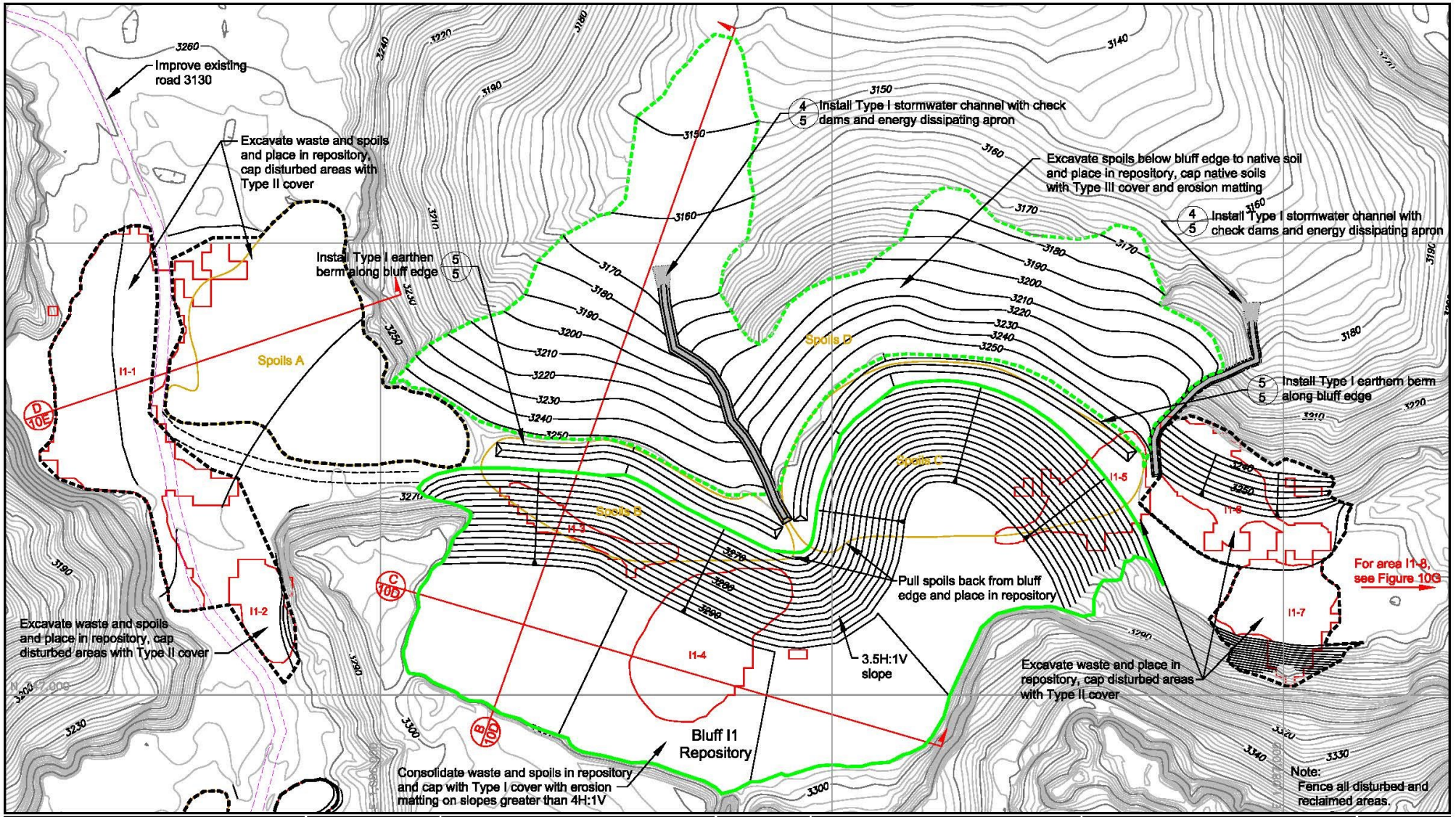

FIGURE 3. BLUFF I1 RECLAMATION DESIGN, RECLAMATION PLAN.

Figure 4. Preparing the Bluff I-1 repository. September 2012.

Figure 5. Bentonite layer placed on floor of Bluff I-1 repository. September 2012.

Riley Pass Reclamation approach

Figure 6. Waste and spoils removal near Bluff I-1 repository. September 2012.

Figure 7. Waste and spoils removal near Bluff I-1 repository. October 2012.

Riley Pass Reclamation approach

Figure 8. Placing and compacting waste at the Bluff I-1 repository. October 2012.

Figure 9. West half bluff I-1 repository. November 2012.

Figure 10. Compaction testing repository surface.

Figure 11. Testing soils metals levels with portable X-ray fluorescence (XRF) analyzer.

Figure 12. Waste removal area with topsoil cap, just prior to installing erosion matting. Red-colored material is new surfacing on the access road. October 2012.

Figure 13. Waste removal area after revegetation, July 2013.

Completed Riley Pass actions

Completed Reclamation: To date, five non-Tronox bluff areas have been reclaimed or partially reclaimed at Riley Pass. The Forest Service has spend over $3 million on waste removal actions, repository construction, road repairs and sediment pond maintenance. Waste removal into repositories has occurred at bluffs F, J, K, I-2, and I-1 under contract by Belair Construction of New Brighton, Minnesota.

Stabilization work: Other work completed in 2012 and 2013 was completed under contracts with Hafner Construction of Ludlow, South Dakota. This work included reconstructing reservoir and pond outlet structures, reconstructing a drainage crossing on Tufte Road and improving and installing Bluff B storm water management structures.

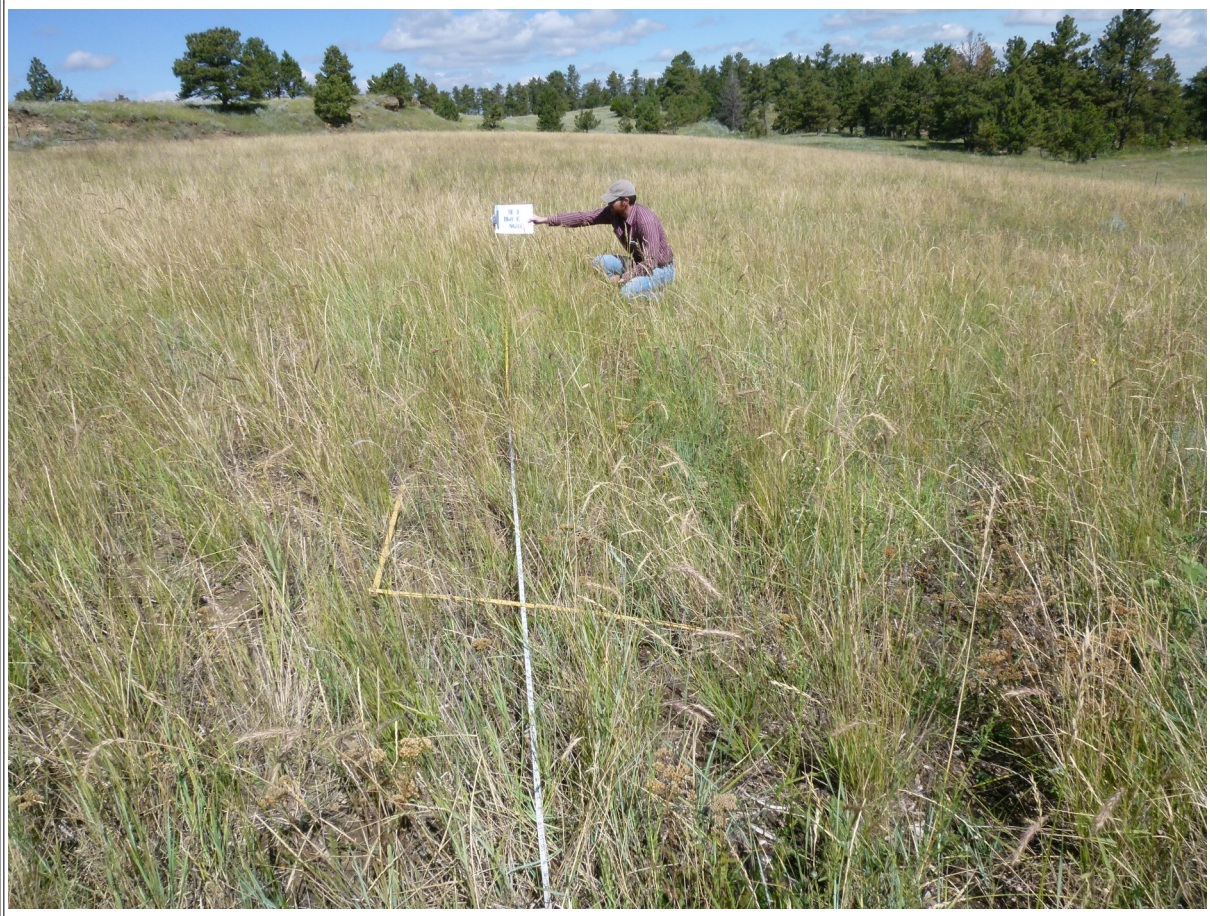

Figure 14.

Re-vegetation monitoring of Bluff K Repository, which was constructed in 2011. Photo taken September 2013.

Future Riley Pass actions

Ongoing Design: TetraTech has submitted a 30% conceptual Tronox bluffs reclamation design to the Forest Service. Additional reclamation design phases will be completed for a final Tronox Bluffs B, C, D, E, and H reclamation plan. TetraTech has also submitted a 100% reclamation design for Tronox Bluff G and re-design of drainage channels and seepage structures at Bluff I-1.

Ongoing Reclamation: Waste removal and repository construction work is ongoing at Bluff I-1 and additional waste removal work will be completed at Tronox Bluff G in 2014. This work will be completed under a contract awarded in 2013 to Belair Construction of New Brighton, Minnesota.

Future Reclamation: At this point, the Forest Service is planning to solicit a contract for additional 2014 work at Bluff I-1 and and Bluff G. This work may take one or more seasons, dependent upon funding availability. Once design work is completed for Tronox Bluffs B, C, D, E, and H, additional reclamation will begin in those areas. The Forest Service's highest priority is to clean Bluff B sediment ponds and conduct actions to manage Bluff B storm water runoff. Funding for the Tronox bluffs reclamation work will be dependent upon the outcome of the ongoing litigation.

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Public Safety Closure Order in effect

Riley Pass mine waste contains hazardous substances including arsenic, molybdenum, thorium, radium and uranium. Due to the human health, safety and environmental concerns related to elevated levels of these substances, the Forest Supervisor has closed the bluffs and some adjacent to all public entry through a special order. The special order has been placed on signs in the Riley Pass area and throughout the North Cave Hills. The order and closure maps are posted at the Sioux Ranger District Office and are also available upon request.

For Additional Information

Documents, maps, and photos regarding site history, human health and environmental concerns and ongoing reclamation at Riley Pass are available for download from the Custer National Forest website at: http://www.fs.usda.gov/custer.

A mailing list is also being maintained for this project. You can stay informed by either checking the website at your convenience, or signing up for our mailing list to receive future editions of the Riley Pass Newsletter in hard copy or electronic format.

For specific requests, additional information, or to be added to the Riley Pass newsletter mailing list, please contact On Scene Coordinator, Dan Seifert, at dseifert@fs.fed.us or (406) 446-4520.